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of gynodioecious plants. His studies in the inheritance of these plants had led him to believe that some plants which he had classed as pistillate were really bisporangiate, and he now finds support for this conclusion in the fact that lessened nutrition (using the term in its widest sense) decreases the development of the stamens, and, in the cases more nearly approaching starvation, suppresses them. Gynomonoecious individuals give evidence for the same fact in that the bisporangiate flowers occupy the most advantageous places in the inflorescence, and appear in the greatest proportion at the height of the flowering season, the earlier and especially the later flowers being largely or entirely monosporangiate. The truly pistillate plants cannot be made to produce bisporangiate flowers through increased nourishment. This is held to support the author's view that the pistillate form in gynodioecious species and the staminate form in androdioecious species are fundamentally distinct and have arisen from the original bisporangiate forms by mutation, and that they are not to be accounted for as the gradual accumulations of minor advantageous fluctuations, nor as due in any way to ordinary physiological response. There is some indication of the presence of distinct "lines" in *Satureia hortensis*, in JOHANNSEN'S sense. CORRENS adheres strictly to the view that nothing heritable can originate except through mutation, holding with NÄGELI and others that the essence of mutation lies not in the size of the step but in its heritability.—G. H. SHULL.

Halophytism.—From his study of the flora of the sea coast at Cagliari, CASU[9] found three features which appeared to depend upon the presence of marine salts in the soil: (1) the sporadic distribution of the plants and their general dwarfing; (2) the prevalence of herbaceous over woody plants in number and extension of species; (3) the prevalent ubiquity of certain species in contact with saline solutions. In order to elucidate these points, he has made a special physico-chemical study of the soil of the beach and shore at the surface and at various depths, both when seeds were just germinating and when plants were growing, and has compared the chemical composition of the plant and the soil. After summarizing the very contradictory statements made by other observers, which are due, he thinks, to the imperfect and artificial conditions used by most experimenters, he attempted to study the physiological resistance of plants to sea salts under natural conditions. His results agree in showing that the phenomena named above are quite independent of the toxic or the nutritive value of the salts and are rather a multiform effect of more general conditions. Thus, by way of summary he says: the presence of germinating plants at the time of the reactivation of vegetation depends on the presence of organic residues at the surface of the soil and on its hardness; the true factor of distribution of the species is the physico-chemical structure of the soil; the prevalence of herbs and dwarfing are due to impoverishment of the soil; neither the percentage of salts in contact with the roots nor that of any single salt has any relation to the luxuriant or to the meager development of the plants; so the problem remains unsolved why certain species live exclusively on the salt beach in contact with salts. If it is solvable, CASU says the clue must doubtless be sought in a profound and accurate study of the histological structure of the halophyte itself. To us that sounds hopeless.—C. R. B.

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[9] CASU, A., Contribuzione allo studio della flora delle saline di Cagliari. Parte III. Resistenza fisiologica della flora delle saline all' azione del sale marino. Annali di Botanica 5:273–354. 1907.

Polymorphism of Hymenomycetes.—LYMAN[10] has made culture studies of certain Hymenomycetes, giving especial attention to woody and incrusting species, the primary object of the research being to obtain further knowledge of polymorphism in the group. The summarized results contain the following facts. The basidiospores of about 75 species of Polyporaceae, Hydnaceae, and Thelephoraceae were germinated and grown in pure cultures, and about 40 per cent. of them were found to possess some secondary method of reproduction, usually mycelial oidia or chlamydospores. Oidia were not found among the Thelephoraceae and Hydnaceae, but were produced by one-half of the species of Polyporaceae studied. Chlamydospores have been known in a few agarics and in a considerable number of Polyporaceae, but, aside from certain doubtful cases, were not known among the lower Hymenomycetes. The author found them much more common, especially upon the mycelium, than was known previously, finding them in over one-fourth of the species cultivated. Conidia or other rather highly specialized secondary methods of reproduction were found in seven species, all belonging to Thelephoraceae except Lentodium. The general conclusions are that a considerable majority of Hymenomycetes possess no secondary spores; that oidia are common among the Agaricaceae and Polyporaceae, and are confined to these two families; that chlamydospores occasionally occur in connection with the basidio-fructification, and are quite widely distributed on the mycelia of all families; and that conidia and other highly specialized secondary methods of reproduction are rare, occurring more frequently in the Thelephoraceae than in the higher families.—J. M. C.

Precipitin and relationship.—The precipitin reaction discovered by KRAUS and more fully marked out by TSCHISTOWITSCH and BORDET, and others, has been used by MAGNUS and FRIEDENTHAL[11] in an attempt to show experimentally the relationship of plants. The experiments were conducted as follows. Extracts containing albuminous substances were prepared from yeast, Tuber, and Agaricus, by the method used by BÜCHNER in the preparation of zymase solutions from yeast. These extracts were injected into animals, and after 12–14 days serum from the animals was treated with small quantities of the albuminous extracts. The yeast extract gave a precipitate with the serum of the animal that had been treated with yeast extract, a slight cloudiness with the serum of Tuber, but none

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[10] LYMAN, GEORGE RICHARD, Culture studies on polymorphism of Hymenomycetes. Proc. Boston Soc. Nat. Hist. **33**:125–209. *pls. 18–26.* 1907.

[11] MAGNUS, W., and FRIEDENTHAL, HANS, Ein experimenteller Nachweis natürlicher Verwandschaft. Ber. Deutsch. Bot. Gesells. **24**:601–607. 1907.